

FIG-3

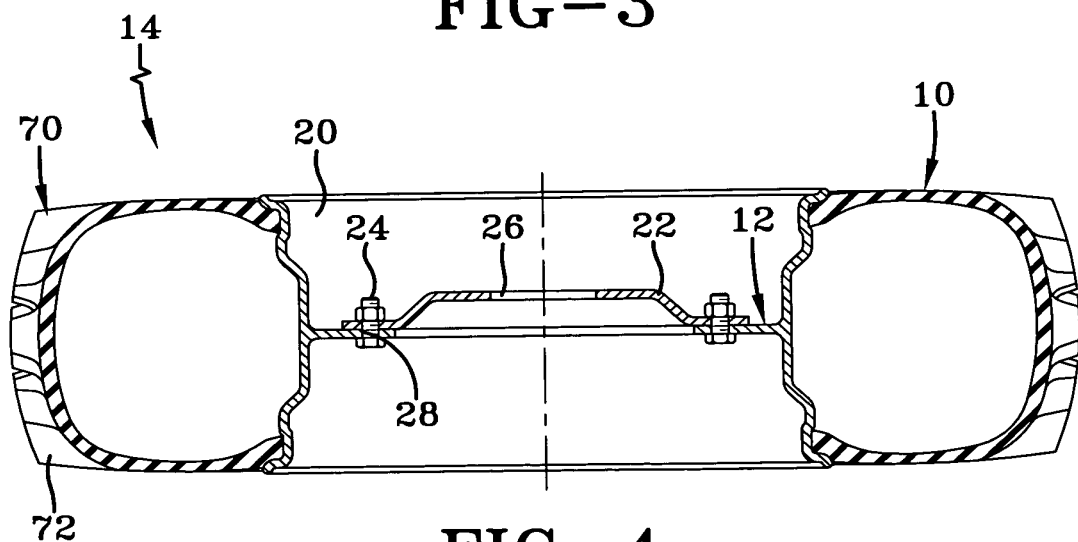


FIG-4

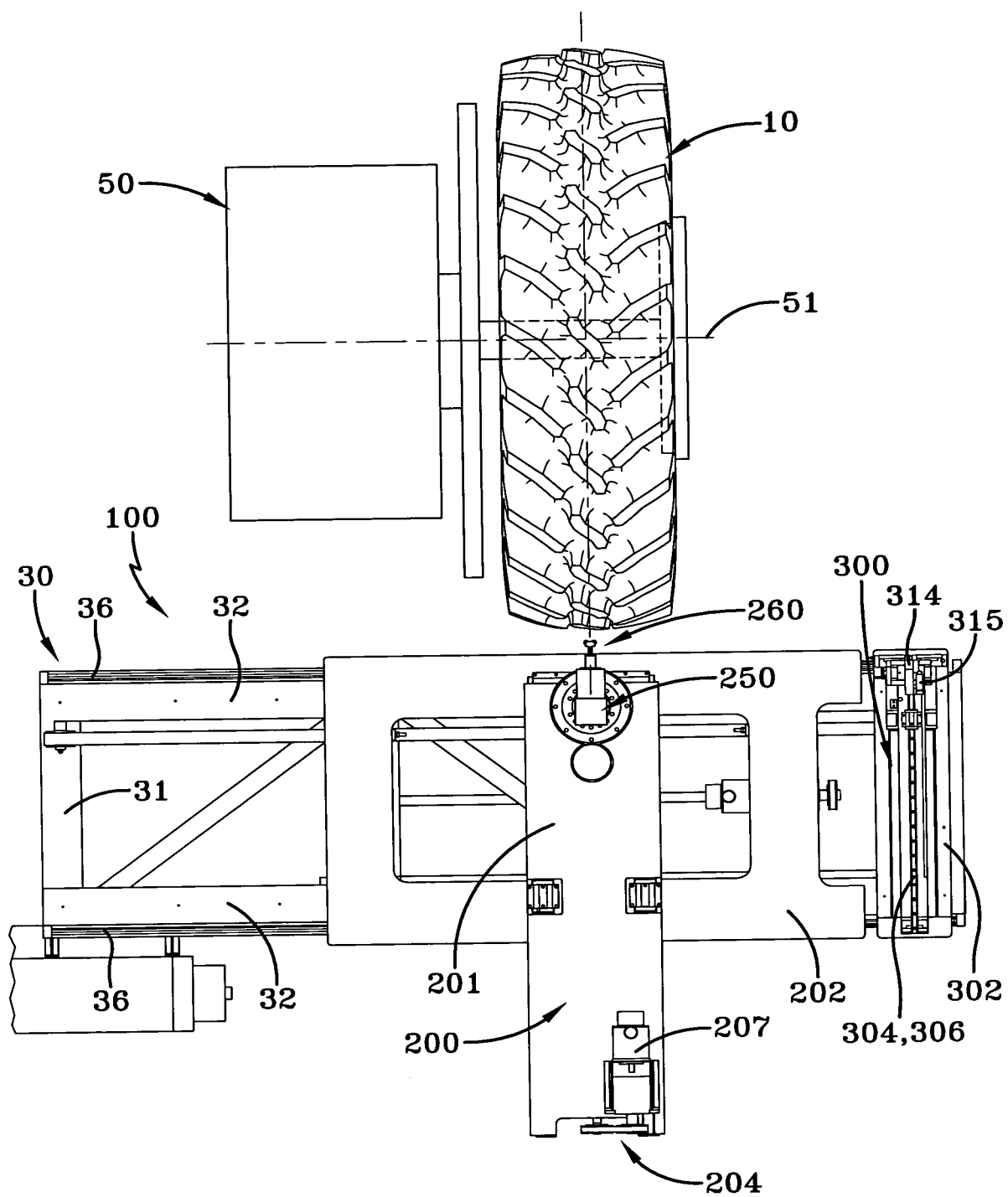


FIG-5

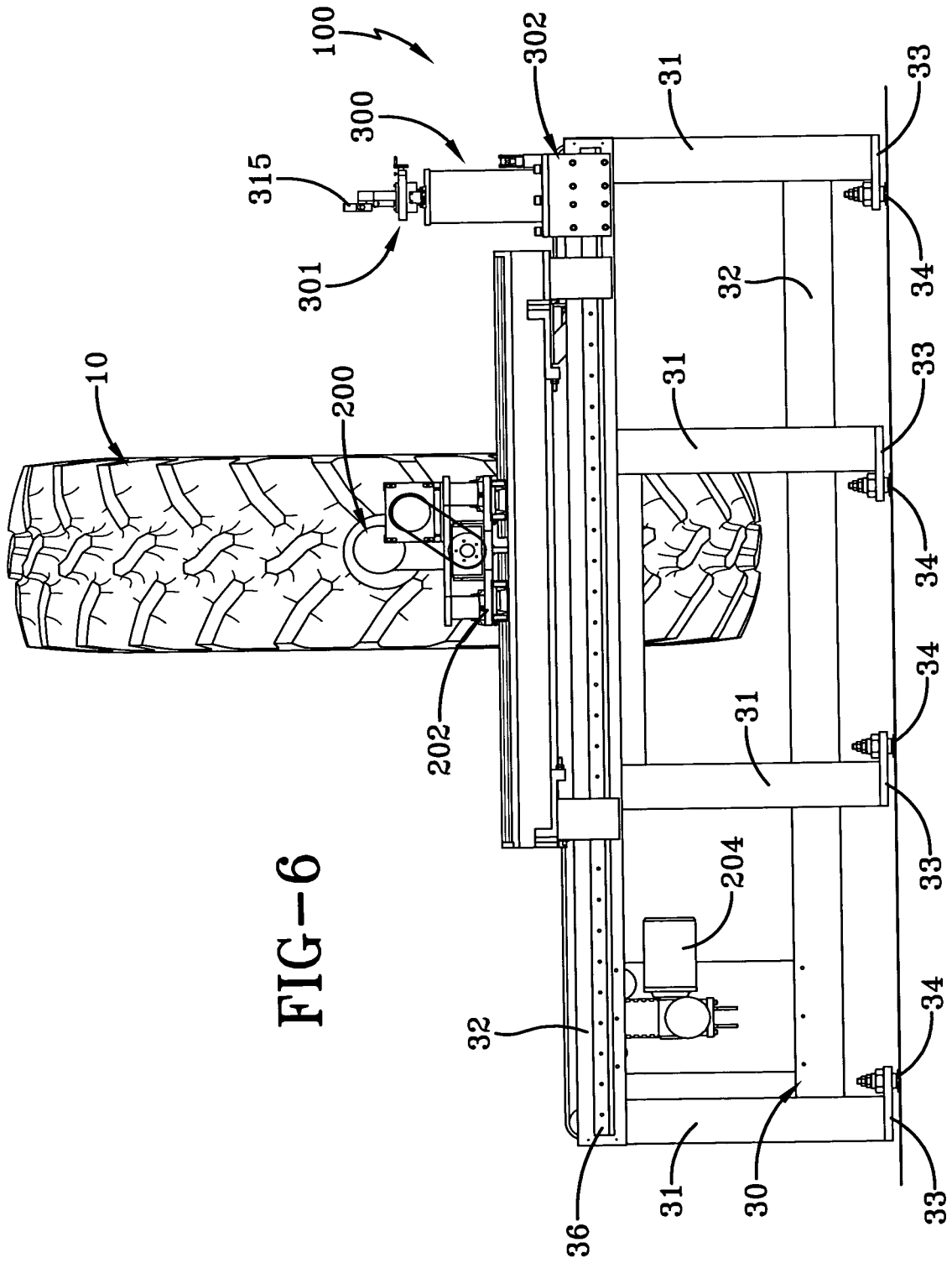


FIG-6

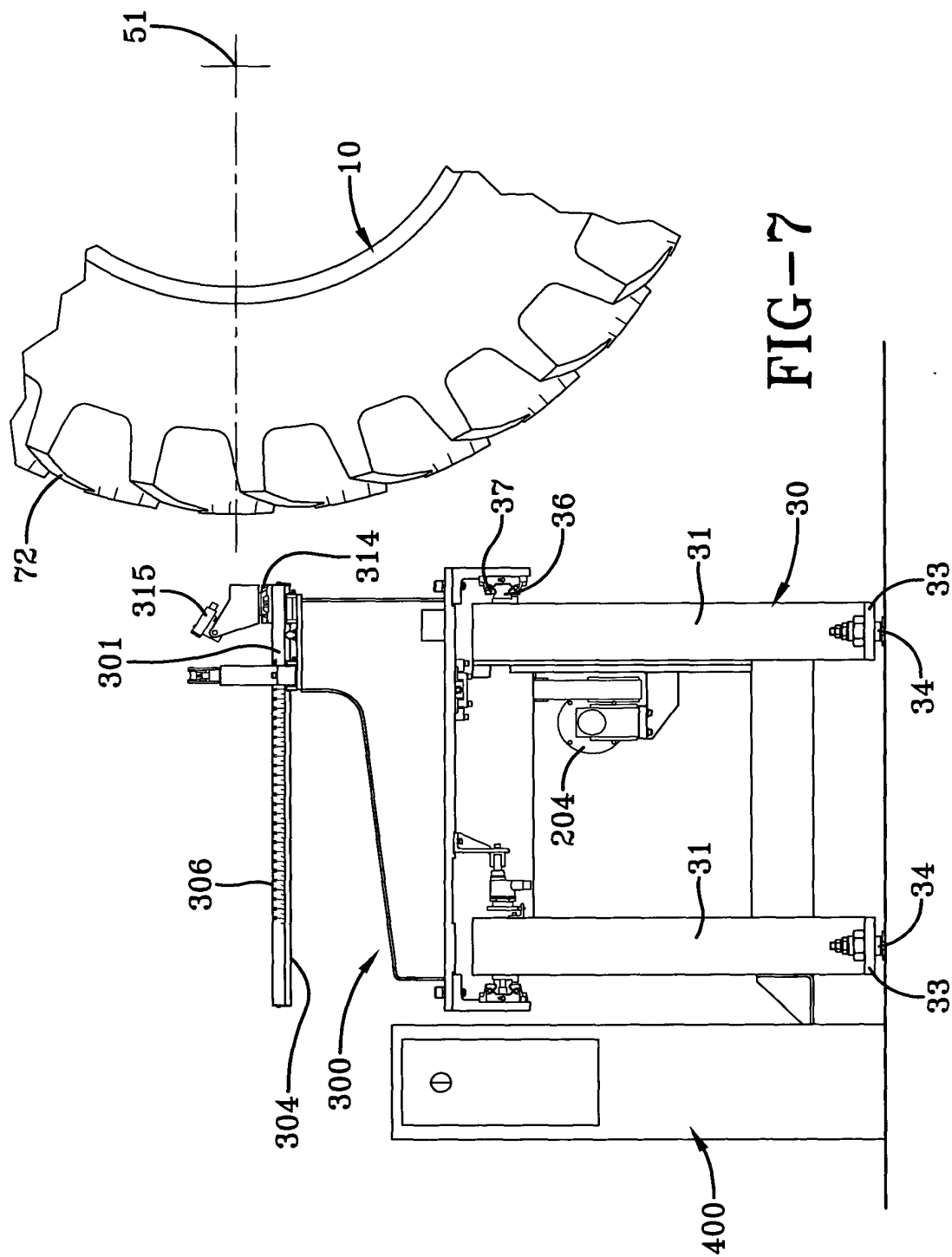
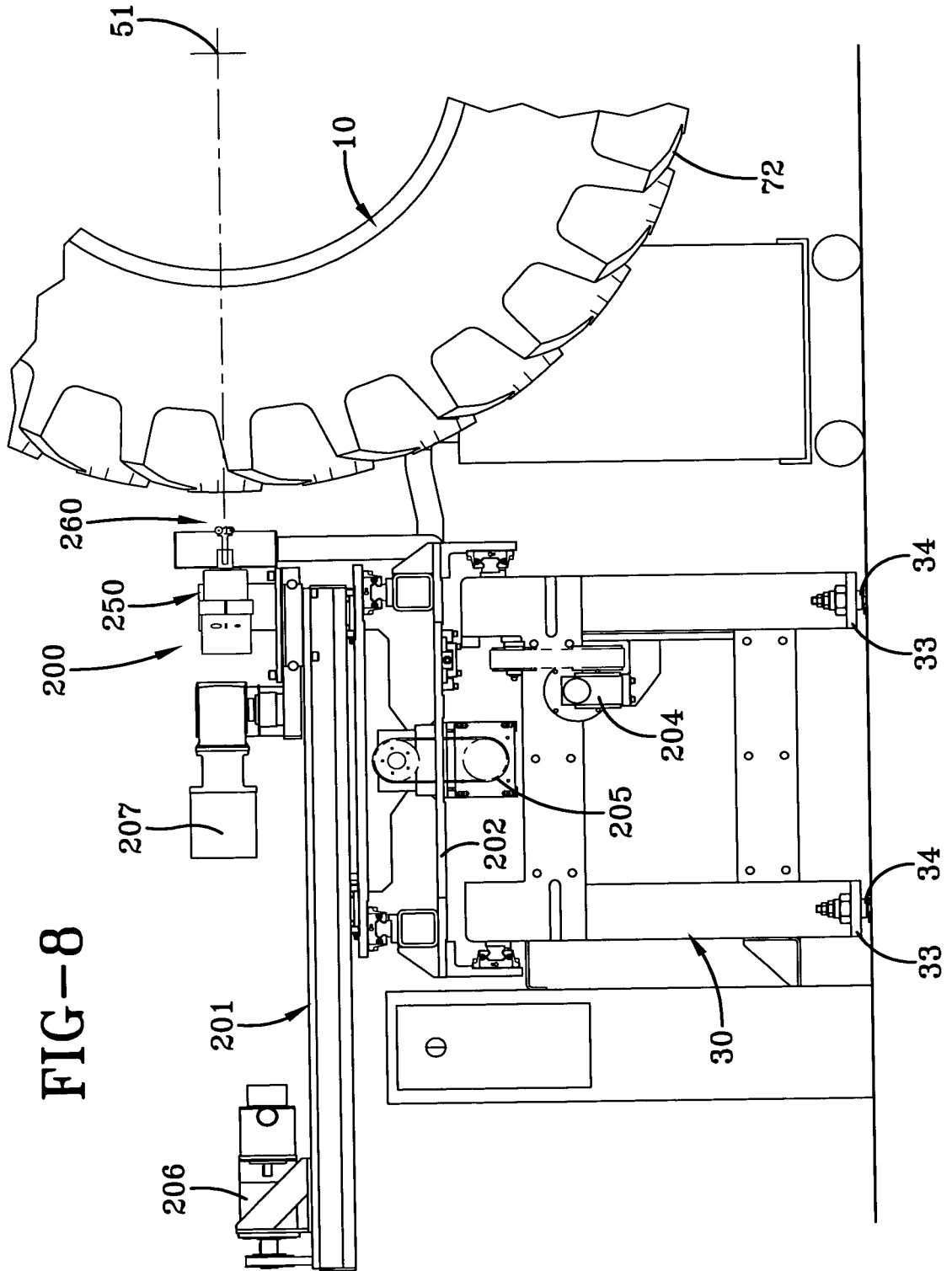


FIG-8



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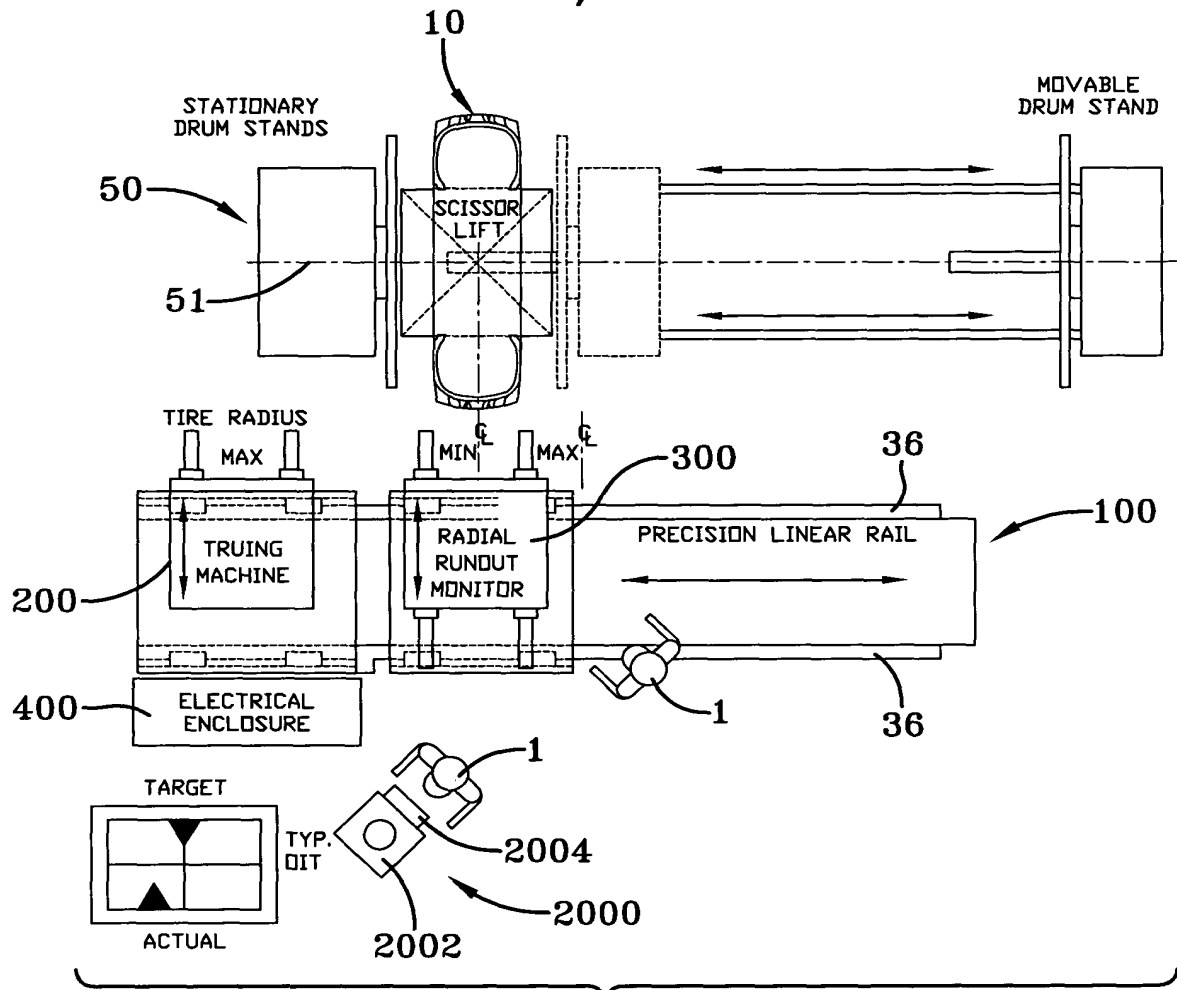


FIG-9

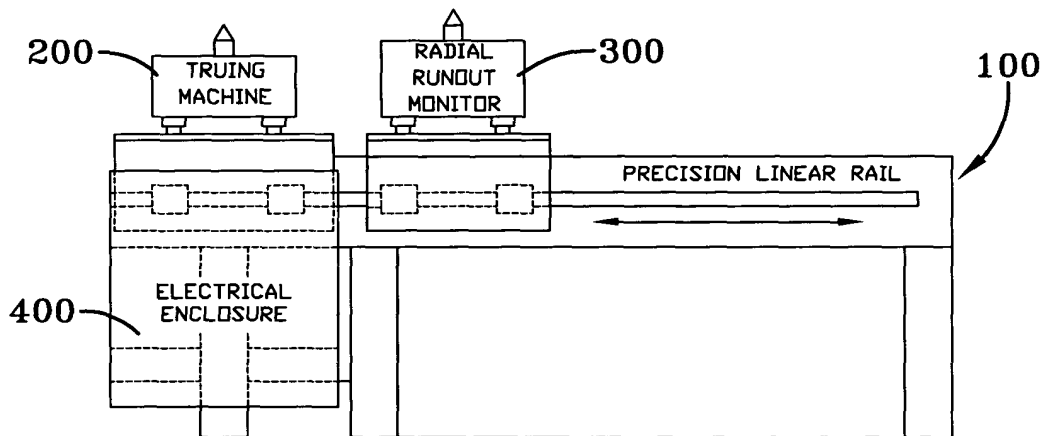


FIG-10

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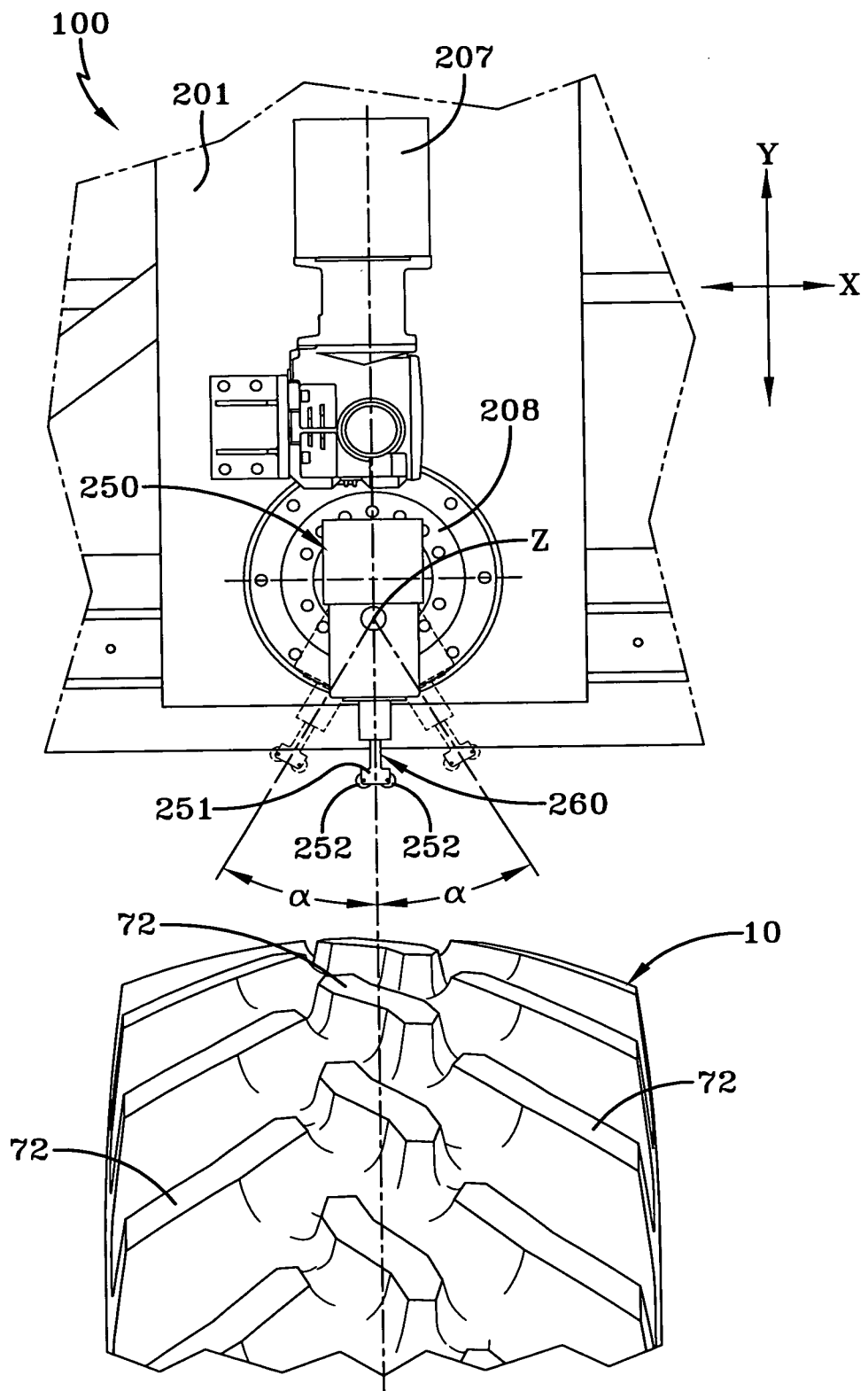


FIG-11

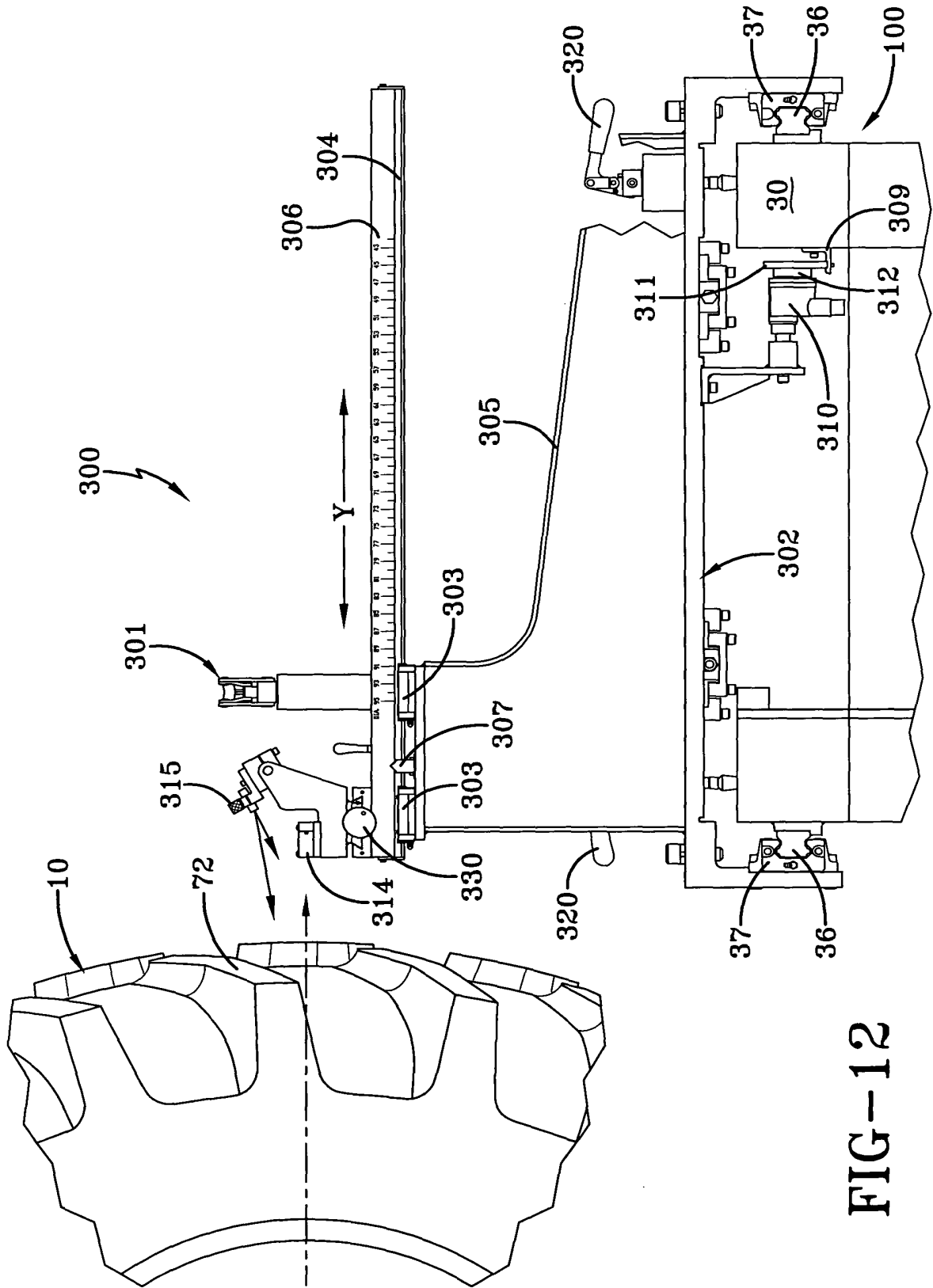


FIG-13A

VERTICAL DISPLACEMENT AT 32 Km/h

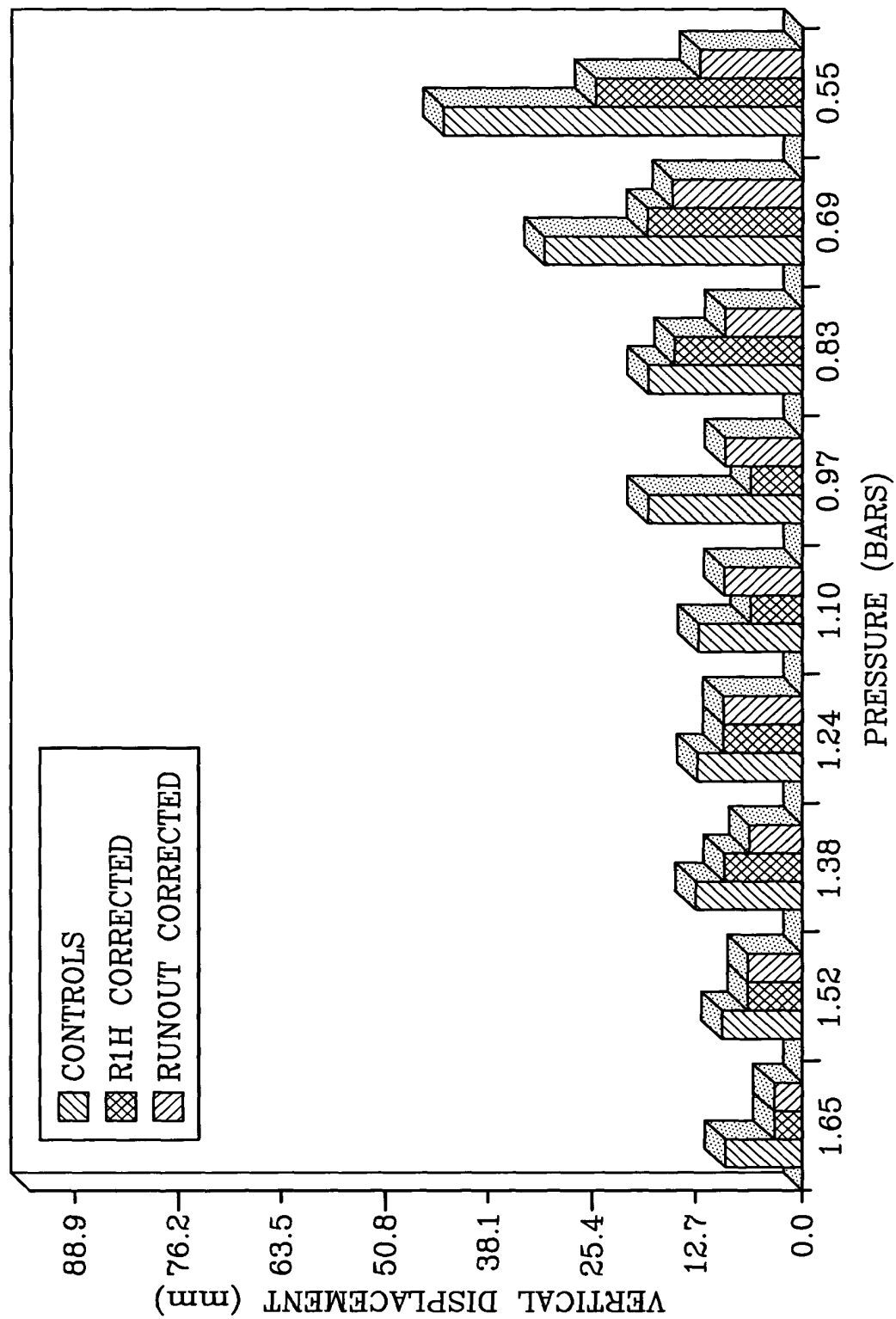


FIG-13B

VERTICAL DISPLACEMENT AT 35 Km/h

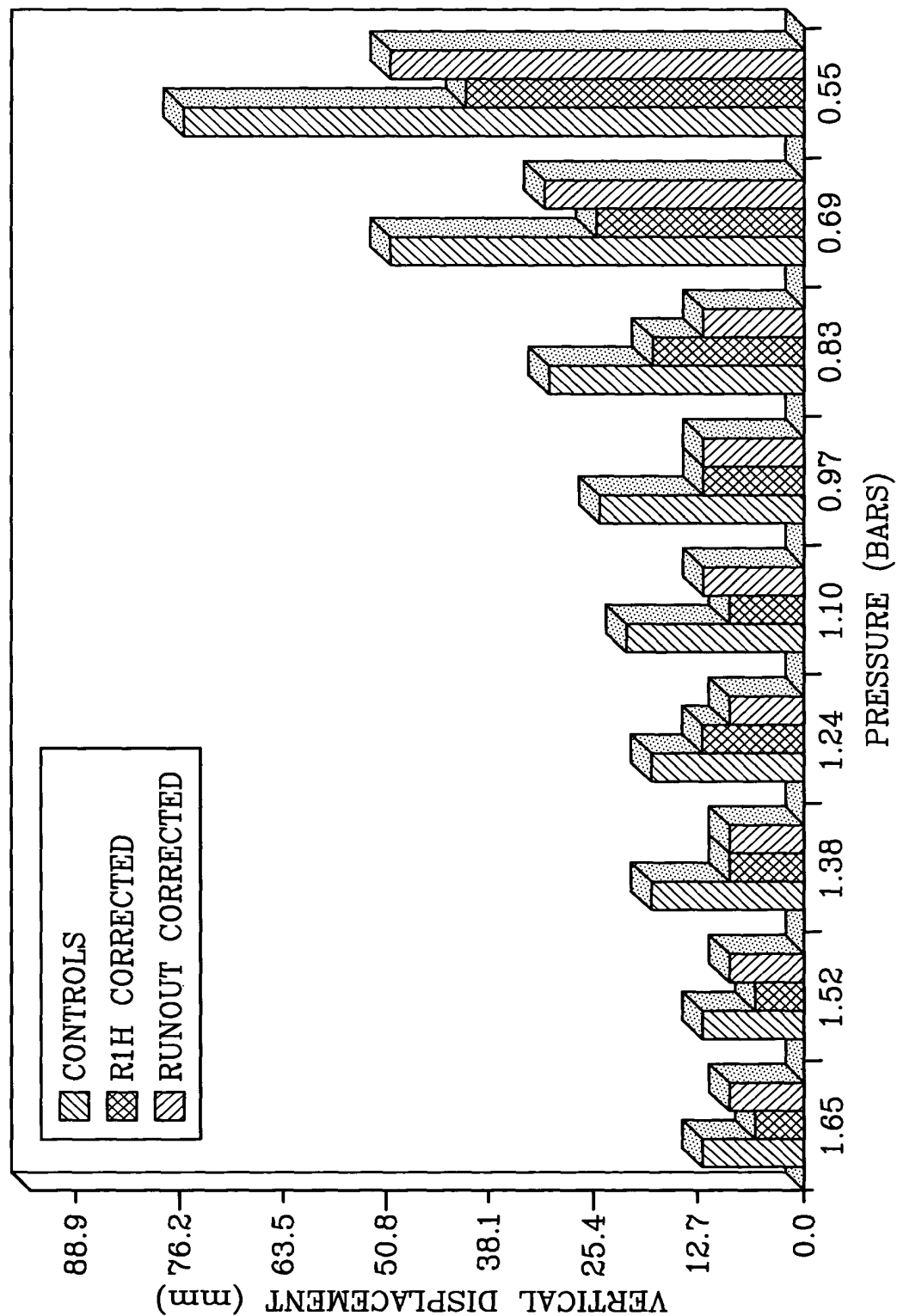
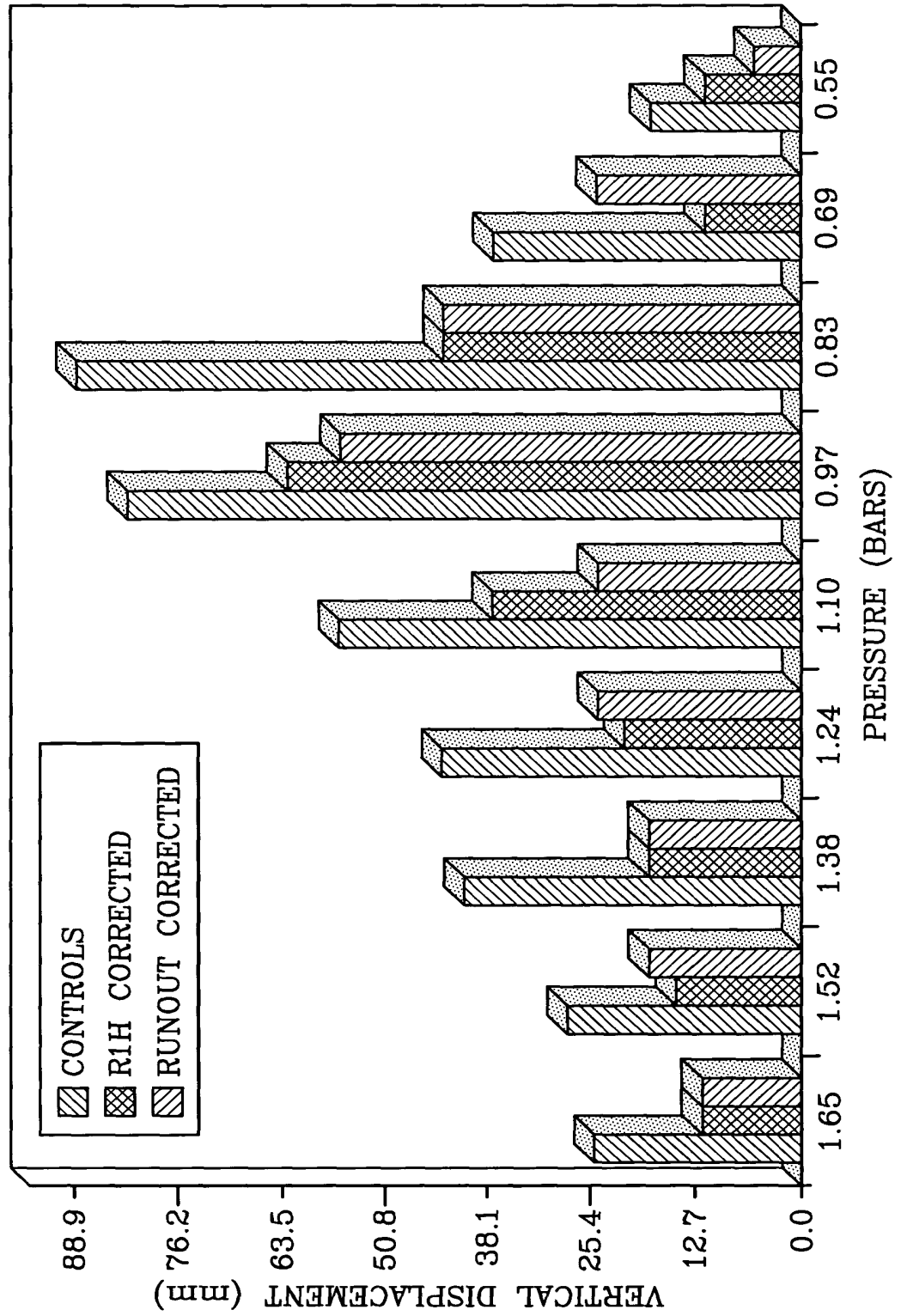


FIG-13C

VERTICAL DISPLACEMENT AT 42 Km/h



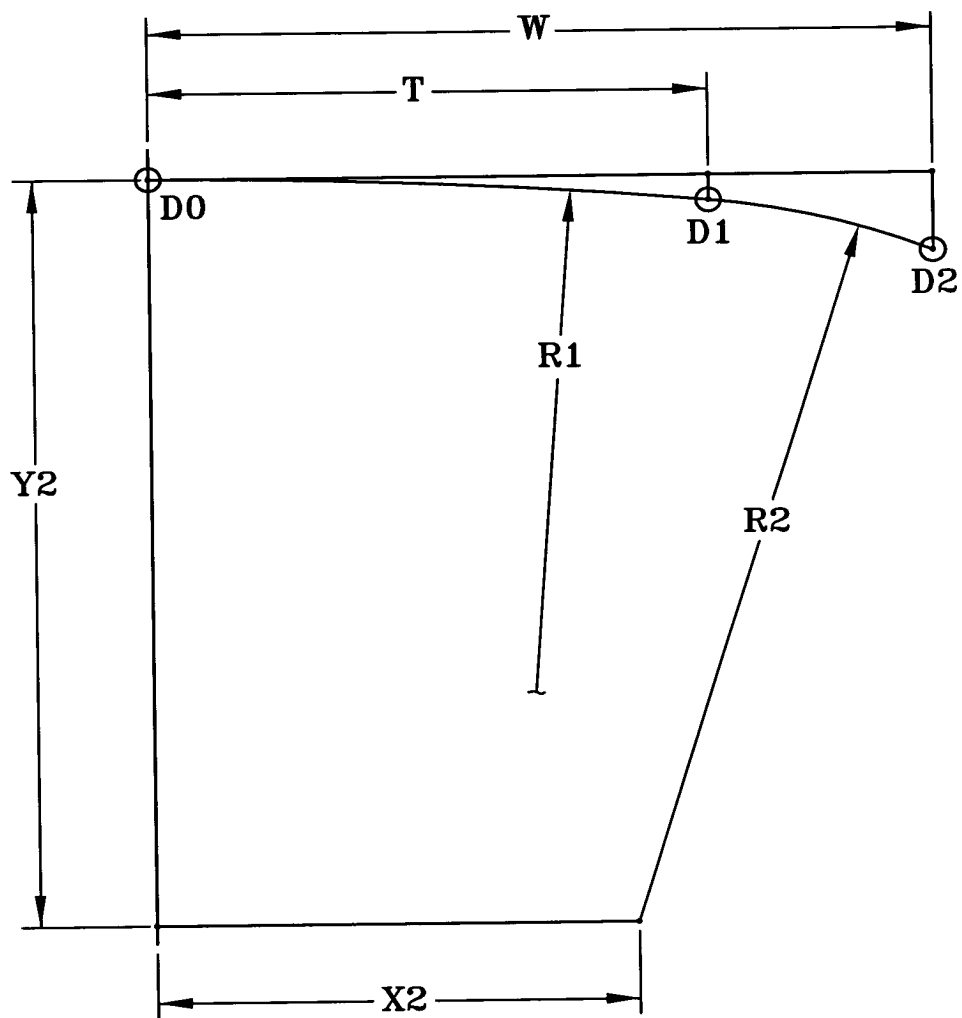
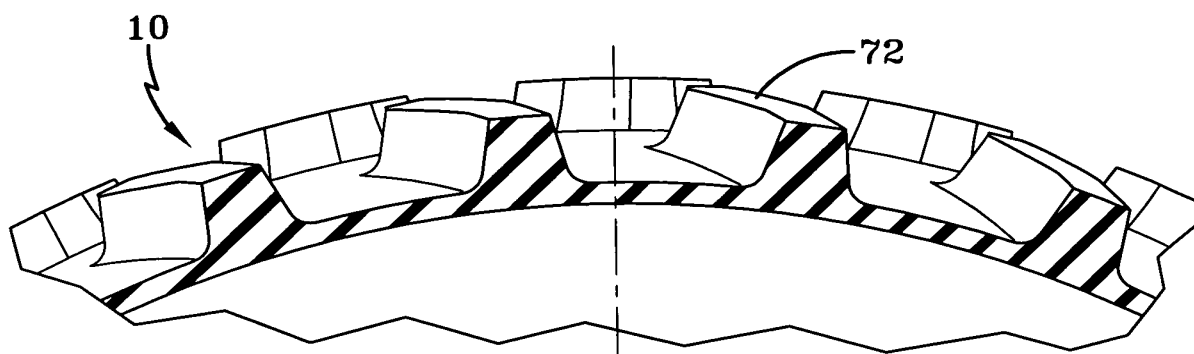
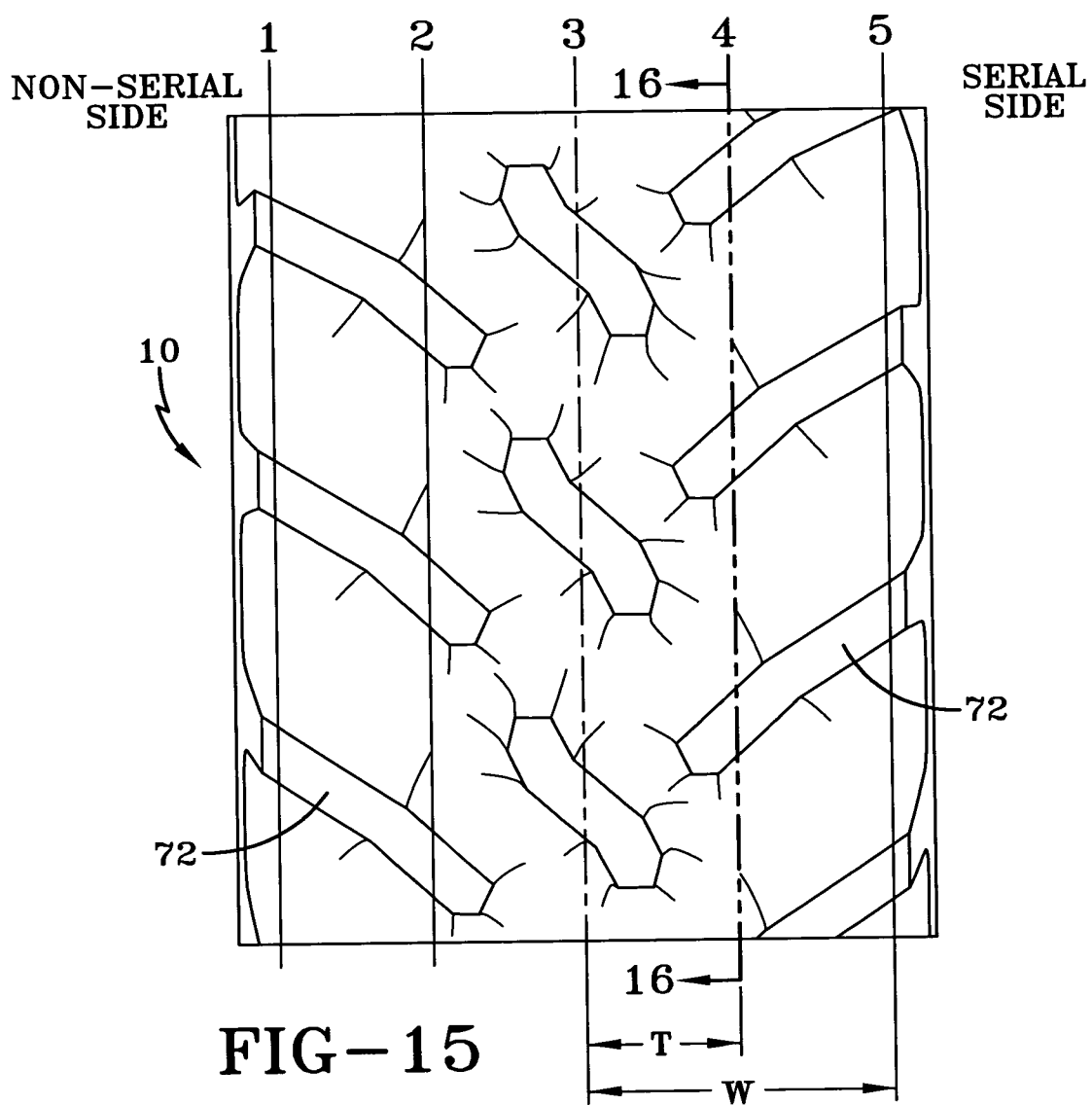


FIG-14



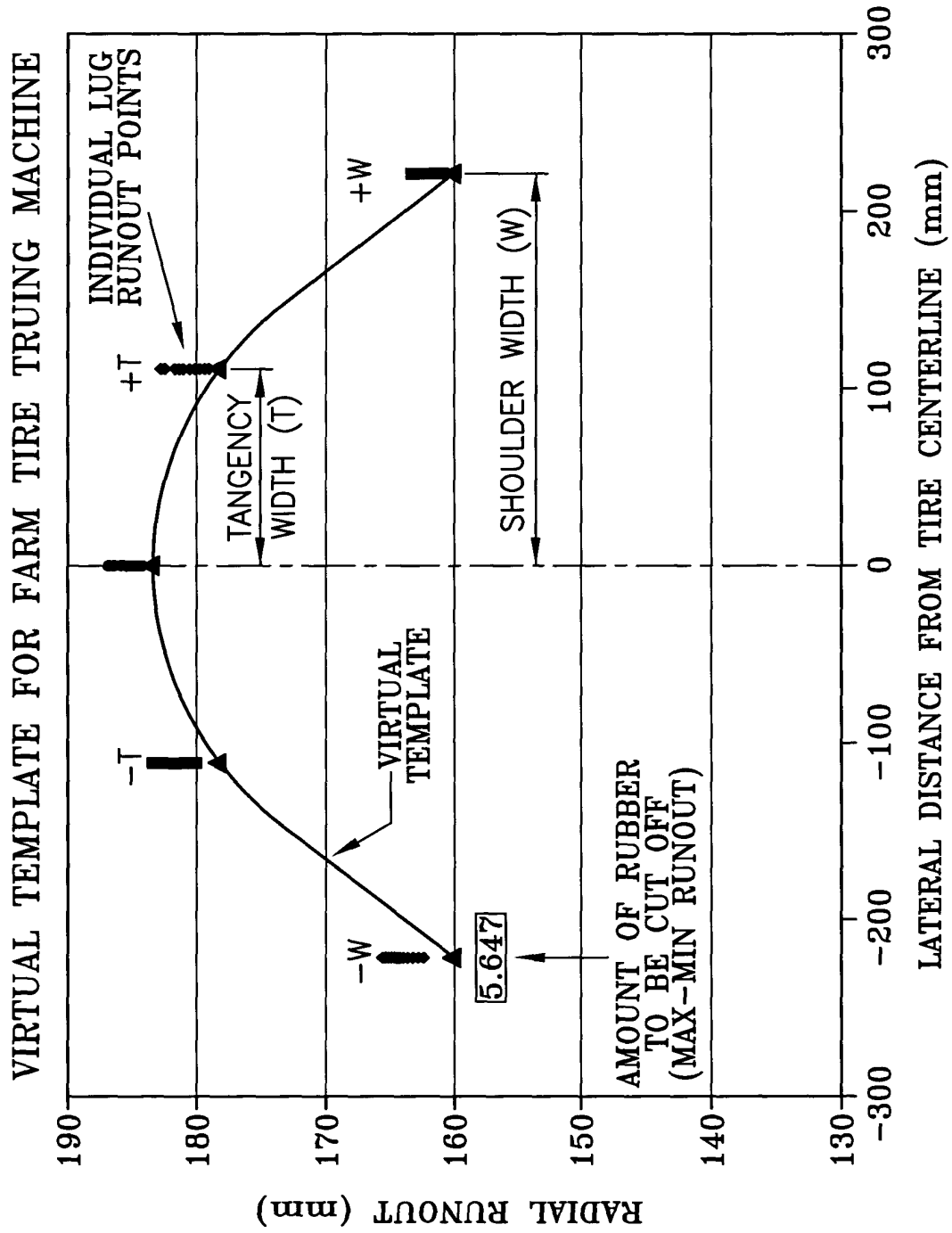


FIG-17

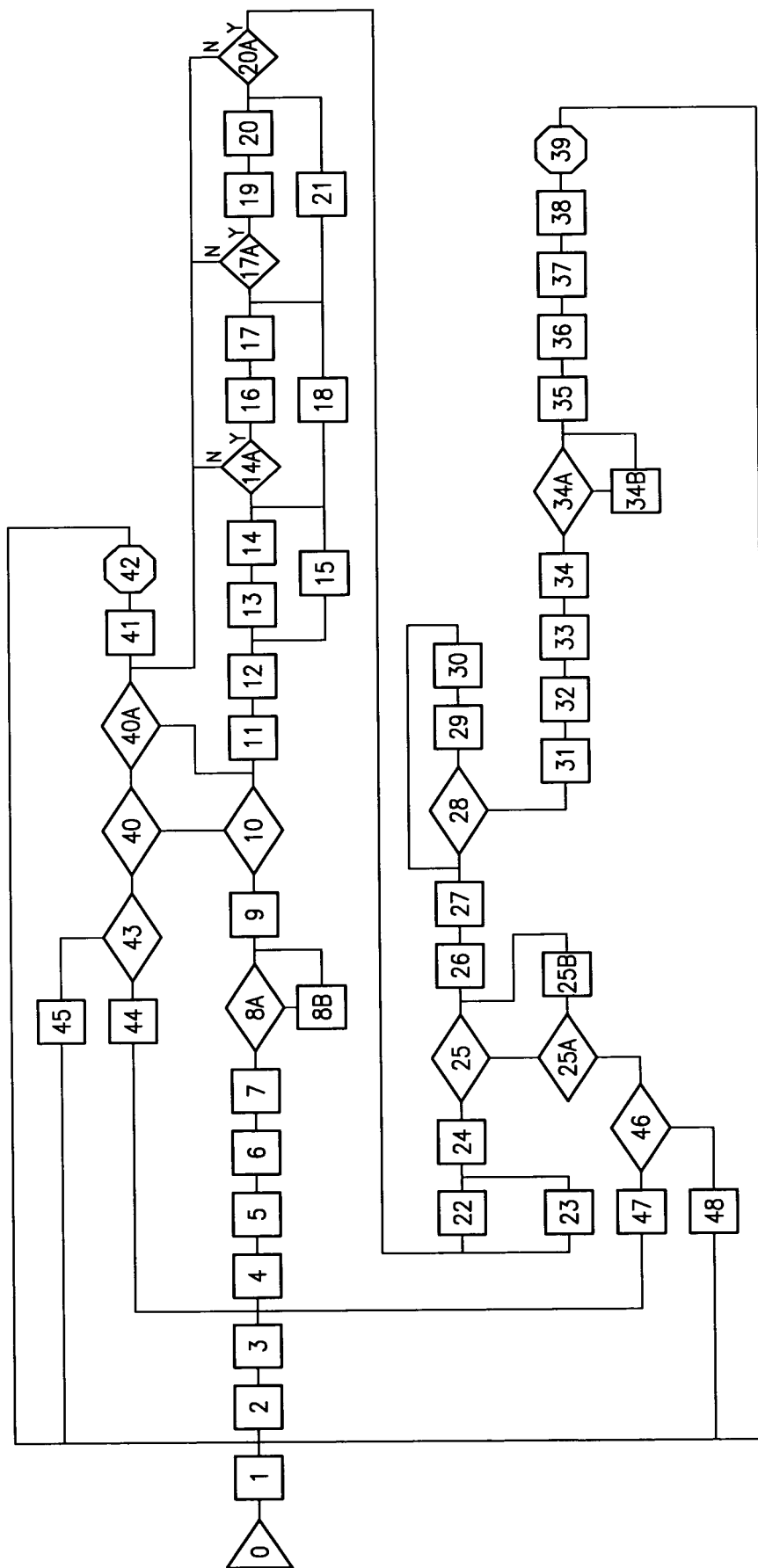


FIG-18

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- 0- START UP
- 1- HOME MACHINE ELEMENTS OPERATOR PRESS HOME AXES BUTTON.
- 2- LOCATE TIRE, RAISE ON LIFT, AND CHUCK TIRE.
- 3- ENTER PROCESS DATA INTO COMPUTER.
- 4- MOVE LASER TO MOLD SPLIT LINE, ADJUST W/VERNIER, PRESS BUTTON TO LOCK DOWN CARRIAGE.
- 5- ADJUST LASER Y-AXIS INTO POSITION FOR NEXT SIZE DIAMETER TIRE.
- 6- ROTATE TIRE SO LASER IS JUST BEFORE 1ST LUG AND RESET DRUM ENCODER TO 0-DEGREES.
- 7- PRESS TAKE RUNOUT MEASUREMENT PB, TIRE ROTATES AND MACHINE COLLECTS DATA.
- 8A- IS MOLD SPLIT AT CENTERLINE (NO/YES).
- 8B- MOVE CARRIAGE TO CORRECT POSITION.
- 9- DO THE FOLLOWING CALCULATIONS ON DATA
 - 1) FIND THE # OF LUGS
 - 2) LUG AVERAGING ROUTINE (1 VALUE/LUG)
 - 3) FIND LOW LUG VALUE, HIGH LUG
 - 4) MEASURE RUN-OUT AND VERIFY
 - 5) FLAT SPOT CHECKING
 - 6) RADIAL RUN-OUT TEST (5 HARMONICS)
- 10- IS TIRE A TRUING CANDIDATE?
- 11- TURN OFF CL LASER, UNLOCK/MOVE LASER TO RIGHT-TANGENT PT., PRESS BUTTON TO LOCK DOWN CARRIAGE.
- 12- PRESS TAKE RUNOUT MEASUREMENT PB, TIRE ROTATES AND MACHINE COLLECTS DATA.

FIG-19A

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- 13– UNLOCK/MOVE LASER TO RIGHT-SHOULDER PT.,
PRESS BUTTON TO LOCK DOWN CARRIAGE.
- 14– PRESS TAKE RUNOUT MEASUREMENT PB, TIRE
ROTATES AND MACHINE COLLECTS DATA.
- 14A– CONTINUE (NO/YES)
- 15– DO CALCULATIONS ON RIGHT-TANGENT DATA
 - 1) FIND THE # OF LUGS
 - 2) LUG AVERAGING ROUTINE (1 VALUE/LUG)
 - 3) FIND LOW LUG VALUE
 - 4) MEASURE RUN-OUT AND VERIFY
 - 5) FLAT SPOT CHECKING
- 16– UNLOCK/MOVE LASER TO LEFT-TANGENT PT.,
PRESS BUTTON TO LOCK DOWN CARRIAGE.
- 17A– CONTINUE (NO/YES)
- 17– PRESS TAKE RUNOUT MEASUREMENT PB, TIRE
ROTATES AND MACHINE COLLECTS DATA.
- 18– DO CALCULATIONS ON RIGHT-SHOULDER DATA
 - 1) FIND THE # OF LUGS
 - 2) LUG AVERAGING ROUTINE (1 VALUE/LUG)
 - 3) FIND LOW LUG VALUE
 - 4) MEASURE RUN-OUT AND VERIFY
 - 5) FLAT SPOT CHECKING
- 19– UNLOCK/MOVE LASER TO LEFT-SHOULDER PT.,
PRESS BUTTON TO LOCK DOWN CARRIAGE.
- 20– PRESS TAKE RUNOUT MEASUREMENT PB, TIRE
ROTATES AND MACHINE COLLECTS DATA.
- 20A– CONTINUE (NO/YES)

FIG-19B

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21– DO CALCULATIONS ON LEFT-TANGENT DATA

- 1) FIND THE # OF LUGS
- 2) LUG AVERAGING ROUTINE (1 VALUE/LUG)
- 3) FIND LOW LUG VALUE
- 4) MEASURE RUN-OUT AND VERIFY
- 5) FLAT SPOT CHECKING

22– MOVE LASER BACK AND OUT TO HOME SAFE POSITION.

23– DO CALCULATIONS ON LEFT-SHOULDER DATA

- 1) FIND THE # OF LUGS
- 2) LUG AVERAGING ROUTINE (1 VALUE/LUG)
- 3) FIND LOW LUG VALUE
- 4) MEASURE RUN-OUT AND VERIFY
- 5) FLAT SPOT CHECKING

24– DO THE FOLLOWING CALCULATIONS

- 1) CREATE THE VIRTUAL TEMPLATE
- 2) CONICITY CHECK
- 3) FIND TIR

25– IS TIRE A CANDIDATE FOR TRUING? (NO/YES).

25A– OVERRIDE TO MAKE 2 CUTS (NO/YES).

25B– ADJUST VIRTUAL TEMPLATE.

26– MOVE THE TRUER CARRIAGE TO MOLD SPLIT LINE AND LOCK.

27– TRUER WILL MAKE FIRST PASS AND CUT TO VIRTUAL TEMPLATE.

28– WANT TO MAKE ANOTHER PASS? (NO/YES).

29– ENTER THE DEPTH OF THE FOLLOWING CUT AND PRESS
BUTTON TO INITIALIZE CYCLE.

30– TRUER WILL MAKE PASS AND CUT TO ADJUSTED PROFILE.

FIG–19C

20/22

- 31– UNLOCK THE TRUER STAND AND MOVE IT BACK TO THE HOME POSITION.
- 32– MOVE LASER TO MOLD SPLIT LINE, ADJUST W/VERNIER, PRESS BUTTON TO LOCK DOWN CARRIAGE.
- 33– ADJUST LASER Y–AXIS INTO POSITION FOR NEXT SIZE DIAMETER TIRE.
- 34– PRESS BUTTON TO ASSIGN LASER HOME, RESET LASER ENCODER.
- 34A– IS MOLD SPLIT AT CENTERLINE.
- 34B– MOVE CARRIAGE TO CORRECT POSITION.
- 35– PRESS TAKE RUNOUT MEASUREMENT PB, TIRE ROTATES AND MACHINE COLLECTS DATA.
- 36– DO THE FOLLOWING CALCULATIONS ON DATA
 - 1) FIND THE # OF LUGS
 - 2) LUG AVERAGING ROUTINE (1 VALUE/LUG)
 - 3) FIND LOW LUG VALUE, HIGH LUG
 - 4) MEASURE RUN–OUT AND VERIFY
 - 5) RADIAL RUN–OUT TEST (5 HARMONICS)
- 37– MOVE LASER BACK AND OUT TO HOME SAFE POSITION
- 38– PLACE PROPER MARKINGS ON THE TIRE THEN UN–CHUCK THE TIRE
- 39– MOVE THE TIRE TO THE PROPER LOCATION FOR DISTRIBUTION THEN CONTINUE
- 40– DOES THE TIRE PASS AND NOT NEED TRUING? (NO/YES)
- 40A– OVERRIDE FORCE TRUING ON A TIRE THAT PASSES WITHOUT TRUING? (NO/YES)
- 41– PLACE PROPER MARKINGS ON THE TIRE THEN UN–CHUCK THE TIRE

FIG–19D

21/22

- 42— MOVE THE TIRE TO THE PROPER LOCATION
FOR DISTRIBUTION THEN CONTINUE
- 43— DO YOU WANT TO RE—CHUCK THE TIRE? (NO/YES)
- 44— MOVE LASER BACK TO THE HOME POSITION
AND RE—CHUCK THE TIRE
- 45— DISCARD TIRE APPROPRIATELY AND LOCATE NEW TIRE
- 46— DO YOU WANT TO RE—CHUCK THE TIRE? (NO/YES)
- 47— MOVE LASER BACK TO THE HOME POSITION
AND RE—CHUCK THE TIRE
- 48— DISCARD TIRE APPROPRIATELY AND LOCATE NEW TIRE

FIG—19E

